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CLAIMS

1. An Internet protocol (IP) filter, comprising processor-executable instructions that, when executed on a processor, perform the following steps:
- monitoring Internet protocol data packets transmitted from one or more clients to a server;
  - obtaining a network address from an IP data packet transmitted by a client;
  - and
  - processing IP data packets from the client if a Network address that is uniquely associated with the client is stored in a client table.
2. The Internet protocol filter as recited in claim 1, further comprising processor-executable instructions that, when executed on a processor, perform the following steps:
- if the Network address is not stored in the client table, retrieving a client limit value from a client limit field, the client limit value indicating a maximum number of unique clients for which IP data packets can be processed;
  - processing IP data packets from the client if the number of Network addresses in the client table is less than the client limit value; and
  - storing the Network address in the client table.



1           5.     The Internet protocol filter as recited in claim 1, further comprising  
2 processor-executable instructions that, when executed on a processor, perform the  
3 following steps:

4           if the first Network address is not stored in the client table, retrieving a  
5 client limit value from a client limit field, the client limit value indicating a  
6 maximum number of unique clients for which IP data packets can be processed;

7           if the number of Network addresses in the client table is greater than or  
8 equal to the client limit value, transmitting a signal to each Network address listed  
9 in the client table; and

10          if a client at a second Network addresses does not respond to the signal,  
11 removing the second Network address from the client table, inserting the first  
12 Network address into the client table and processing IP data packets from the first  
13 client.

14  
15          6.     The Internet protocol filter as recited in claim 5, further comprising  
16 processor-executable instructions that, when executed on a processor, perform the  
17 following steps:

18          removing the second Network address from the client table; and

19          inserting the first Network address into the client table.  
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1       7. A method, comprising:  
2       detecting when a current client attempts to establish a connection with a  
3       server;  
4       determining a unique client identifier that is associated with the current  
5       client;  
6       determining if a total number of previous clients having access to the server  
7       is less than a client limit;  
8       determining if the current client has previously been allowed to access the  
9       server;  
10      providing access to the server if the total number of previous clients having  
11      access to the server is less than a client limit;  
12      providing access to the server if the total number of previous clients is  
13      greater than or equal to the client limit and if the current client has previously been  
14      allowed to access the server; and  
15      storing the unique client identifier associated with the current client in  
16      memory if access is provided to the current client.

17  
18      8. The method as recited in claim 7, wherein the determining if a total  
19      number of previous clients having access to the server is less than a client limit  
20      further comprises:  
21      determining how many unique identifiers are stored in memory; and  
22      comparing the number of unique identifiers in memory with the client limit.  
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1           9.    The method as recited in claim 7, wherein the determining if the  
2 current client has previously been allowed to access the server is only performed if  
3 the total number of previous clients having access to the server is greater than or  
4 equal to the client limit.

5  
6           10.   The method as recited in claim 7, wherein the determining if the  
7 current client has previously been allowed to access the server further comprises:

8                comparing the unique identifier of the current client with the unique  
9 identifiers of each previous client that has been allowed to access the server;

10              determining that the current client has previously been allowed to access  
11 the server if the current client identifier matches a previous client identifier.

12  
13           11.   The method as recited in claim 7, wherein the determining if the  
14 current client has previously been allowed to access the server further comprises:

15                transmitting a signal to each previous client that has been allowed to access  
16 the server; and

17                determining that the current client has previously been allowed to access  
18 the server if at least one of the previous clients fails to acknowledge the signal.

19  
20           12.   The method as recited in claim 7, further comprising:

21                pre-configuring the client limit; and

22                storing the client limit in memory.  
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1           **13.**    The method as recited in claim 12, wherein the client limit has a pre-  
2 defined maximum to which it may be configured.

3  
4           **14.**    The method as recited in claim 7, further comprising:  
5 pre-configuring the client limit;  
6 encrypting the client limit; and  
7 storing the encrypted client limit in memory.

8  
9           **15.**    The method as recited in claim 7, further comprising:  
10 retrieving an encrypted client limit; and  
11 decrypting the encrypted client limit to derive the client limit.

12  
13           **16.**    The method as recited in claim 7, wherein the determining the  
14 unique client identifier that is associated with the current client further comprises  
15 identifying an Internet protocol address from a data packet transmitted by the  
16 current client.

17  
18           **17.**    The method as recited in claim 7, further comprising storing the  
19 unique client identifiers in a client table in memory.

20  
21           **18.**    The method as recited in claim 7, wherein the client identifier is a  
22 network address.

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1       **19.**   A server that provides access to a limited number of clients,  
2 comprising:

3       memory;

4       a network interface configured to handle communications between the  
5 server and a plurality of clients;

6 an operating system stored in the memory;

7       a client limit stored in the memory, the client limit denoting a number of  
8 unique clients that are allowed to access the server;

9       an IP stack in the memory that is used to process data packets transmitted  
10 from clients;

11       a client table in the memory for storing a unique Network address for each  
12 client that accesses the server; and

13       a communications filter configured to allow access to a first client if the  
14 total number of clients that have accessed the server is less than the client limit, or  
15 if the total number of clients that have accessed the server is greater than or equal  
16 to the client limit and the first client has previously accessed the server.

17  
18       **20.**   The server as recited in claim 19, wherein the Communications filter  
19 is further configured to search the client table for a first Network address  
20 associated with the first client and determine that the first client has previously  
21 accessed the server if the first Network address is found in the client table.

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1           **21.**    The server as recited in claim 19, wherein the Communications filter  
2 is further configured to search the client table for a second Network address  
3 associated with the first client and determine that the first client has previously  
4 accessed the server if the second Network address is found in the client table.

5  
6           **22.**    The server as recited in claim 21, wherein the Communications filter  
7 is further configured to determine the second Network address by signaling each  
8 Network address listed in the client table and determine that the second Network  
9 address is a network address listed in the table that does not acknowledge the  
10 signal.

11  
12           **23.**    The server as recited in claim 19, wherein the client limit is  
13 configurable.

14  
15           **24.**    The server as recited in claim 19, wherein the Communications filter  
16 is further configured to signal that the client limit has been exceeded and to deny  
17 server access to the first client if the total number of clients that have accessed the  
18 server is greater than or equal to the client limit, and the first client has not  
19 previously accessed the server.

20  
21           **25.**    The server as recited in claim 19, wherein the client limit is  
22 encrypted, the server further comprising a decryption module configured to  
23 decrypt the encrypted client limit.

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1           **26.**     A method for providing server access to a limited number of clients,  
2 the method comprising:

3           monitoring TCP/IP packets sent from a plurality of clients to a server;  
4           obtaining a unique Network address for each client from one or more  
5 packets transmitted by the client;  
6           storing the Network address of each client that accesses the server;  
7           determining if a client limit has been reached; and  
8           providing access to a first client if the client limit has been reached, or if  
9 the first client has previously accessed the server.

10  
11           **27.**     The method as recited in claim 26, wherein the determining if the  
12 client limit has been reached further comprises:

13           determining how many unique clients have accessed the server;  
14           comparing the number of unique client with the client limit; and  
15           determining that the client limit has been reached if the number of unique  
16 clients is greater than or equal to the client limit.

17  
18           **28.**     The method as recited in claim 26, wherein the determining if the  
19 first client has previously accessed the server further comprises:

20           comparing a first Network address that uniquely identifies the first client  
21 with a table of stored Network addresses; and  
22           determining that the first client has previously accessed the server if the  
23 first Network address matches a stored Network address.

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1           **29.**    The method as recited in claim 26, wherein the determining if the  
2 first client has previously accessed the server further comprises:

3                sending a signal to each of multiple Network addresses of clients that have  
4 accessed the server; and

5                if there is no response to one of the signals, determining that the first client  
6 has previously accessed the server using the Network address of the client from  
7 which there was no response detected.

8  
9           **30.**    The method as recited in claim 26, further comprising:

10                retrieving an encrypted client limit; and

11                decrypting the encrypted client limit to derive the client limit.

12  
13           **31.**    An operating system stored on a computer-readable medium, the  
14 operating system comprising:

15                an IP stack for processing Internet protocol data packets received from  
16 multiple clients;

17                a client limit field containing a client limit value that denotes a maximum  
18 number of clients that may access the IP stack;

19                a client table containing a unique Network address for each client that has  
20 accessed the operating system; and

21                a communications filter configured to determine a first Network address of  
22 a first client attempting to access the operating system, search the client table for  
23 the first Network address, and allow the first client to access the operating system  
24 if the first Network address is found in the client table.

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1           **32.** The operating system as recited in claim 31, wherein the  
2 Communications filter is further configured to:

3           allow the first client to access the operating system if the number of  
4 Network addresses in the client table is less than the client limit value; and  
5           store the first Network address in the client table if the first client is allowed  
6 to access the operating system.

7  
8           **33.** The operating system as recited in claim 31, wherein the  
9 Communications filter is further configured to allow the first client to access the  
10 operating system if the number of Network addresses in the client table is greater  
11 than or equal to the client limit value and the first client has previously accessed  
12 the operating system using a second Network address that is stored in the client  
13 table.

14  
15           **34.** The operating system as recited in claim 33, wherein the  
16 Communications filter is further configured to:

17           transmit a signal to each Network address listed in the client table;  
18           monitor for an acknowledgement to each signal; and  
19           if an acknowledgement is not received from a network address in the client  
20 table, determining that the non-acknowledging Network address is the second  
21 Network address used by the first client.

1       **35.** The operating system as recited in claim 34, wherein the  
2 Communications filter is further configured to replace the second Network address  
3 in the client table with the first Network address.

4  
5       **36.** The operating system as recited in claim 31, wherein the client limit  
6 value is encrypted, and the operating system further comprises a decryption  
7 module that is configured to decrypt the client limit value.

8  
9       **37.** A computer-readable medium comprising computer-executable  
10 instructions that, when executed on a computer, perform the following steps:

11       determining a first Internet Protocol (IP) address transmitted from a first  
12 client to a server;

13       searching a client table for the first Network address; and

14       allowing the first client to access the server if the first Network address is  
15 found in the client table.

16  
17       **38.** The computer-readable medium as recited in claim 37, further  
18 comprising computer-executable instructions that, when executed on a computer,  
19 perform the following steps:

20       determining if a client limit has been reached, the client limit indicating a  
21 total number of clients that can access the server;

22       allowing the first client to access the server if the client limit has not been  
23 reached; and

24       inserting the first Network address into the client table.  
25

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1       **39.**   The computer-readable medium as recited in claim 37, further  
2 comprising computer-executable instructions that, when executed on a computer,  
3 perform the following steps:

4           transmitting a signal to each Network address listed in the client table; and  
5           if there is no response from one of the Network addresses signaled,  
6 allowing the first client to access the server, removing the non-responsive Network  
7 address from the client table, and inserting the first Network address into the client  
8 table.

9  
10       **40.**   A computer system, comprising:  
11       a processor;  
12       a network interface card to handle communications with multiple clients;  
13       memory;  
14       a global system registry;  
15       a client table having one entry for each client allowed to access the system,  
16 each entry including a unique Internet protocol (IP) address for each client; and  
17       a communications filter configured to:  
18           retrieve a client limit from the global system registry;  
19           determine a first Network address that is associated with a first client  
20 attempting to access the system;  
21           allow the first client to access the system if the first Network address  
22 is stored in the client table or if the number of client table entries is less  
23 than the client limit; and  
24           store the first Network address in the client table if the first client is  
25 allowed to access the system.

1  
2       **41.** The computer system as recited in claim 40, wherein the  
3 Communications filter is further configured to allow the first client to access the  
4 system if the number of entries in the client table is greater than or equal to the  
5 client limit and if the first client has previously accessed the system.

6  
7       **42.** The computer system as recited in claim 41, wherein the  
8 Communications filter is further configured to determine if the first client has  
9 previously accessed the system if the first Network address is stored in the client  
10 table.

11  
12       **43.** The computer system as recited in claim 41, wherein the  
13 Communications filter is further configured to determine if the first client has  
14 previously accessed the system by transmitting a signal to each Network address  
15 listed in the client table, monitoring responses to the signals to determine if a  
16 client at a second Network address is no longer using the Network address,  
17 substituting the first Network address in the table for the second Network address  
18 and allowing the first client to access the system if the client at the second  
19 Network address does not respond to the signal.

20  
21       **44.** The computer system as recited in claim 40, wherein the client limit  
22 is encrypted, the computer system further comprising a decryption module  
23 configured to decrypt the encrypted client limit.  
24  
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1           **45.**    A communications protocol filter, comprising processor-executable  
2 instructions that, when executed on a processor, perform the following steps:

3           monitoring communications protocol data packets transmitted from one or  
4 more clients to a server;

5           obtaining a network address from a communications protocol data packet  
6 transmitted by a client; and

7           processing communications protocol data packets from the client if a  
8 Network address that is uniquely associated with the client is stored in a client  
9 table.

10  
11           **46.**    The communications protocol filter as recited in claim 45, further  
12 comprising processor-executable instructions that, when executed on a processor,  
13 perform the following steps:

14           if the Network address is not stored in the client table, retrieving a client  
15 limit value from a client limit field, the client limit value indicating a maximum  
16 number of unique clients for which communications data packets can be  
17 processed;

18           processing communications protocol data packets from the client if the  
19 number of Network addresses in the client table is less than the client limit value;  
20 and

21           storing the Network address in the client table.  
22  
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1       **47.**    The communications protocol filter as recited in claim 45, wherein  
2 the client is a first client and the Network address is a first Network address, the  
3 communications protocol filter further comprising processor-executable  
4 instructions that, when executed on a processor, perform the following steps:

5           if the first Network address is not stored in the client table, retrieving a  
6 client limit value from a client limit field, the client limit value indicating a  
7 maximum number of unique clients for which communications protocol data  
8 packets can be processed;

9           if the number of Network addresses in the client table is greater than or  
10 equal to the client limit value, determining if the first client is represented in the  
11 client table by a second Network address that is different from the first Network  
12 address; and

13          processing communications protocol data packets from the first client if the  
14 second Network address is found in the client table.

15  
16       **48.**    The communications protocol filter as recited in claim 47, further  
17 comprising processor-executable instructions that, when executed on a processor,  
18 perform the following steps:

19          removing the second Network address from the client table; and  
20          inserting the first Network address into the client table.



1       **49.**   The communications protocol filter as recited in claim 45, further  
2 comprising processor-executable instructions that, when executed on a processor,  
3 perform the following steps:

4           if the first Network address is not stored in the client table, retrieving a  
5 client limit value from a client limit field, the client limit value indicating a  
6 maximum number of unique clients for which communications protocol data  
7 packets can be processed;

8           if the number of Network addresses in the client table is greater than or  
9 equal to the client limit value, transmitting a signal to each Network address listed  
10 in the client table; and

11          if a client at a second Network addresses does not respond to the signal,  
12 removing the second Network address from the client table, inserting the first  
13 Network address into the client table and processing communications protocol  
14 data packets from the first client.

15  
16       **50.**   The communications protocol filter as recited in claim 49, further  
17 comprising processor-executable instructions that, when executed on a processor,  
18 perform the following steps:

19           removing the second Network address from the client table; and  
20           inserting the first Network address into the client table.

21  
22       **51.**   The communications protocol filter as recited in claim 45, wherein  
23 the communications protocol is an Internet protocol and the communications  
24 protocol data packets are Internet protocol data packets.

25